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USE OF APPS AS TOOLS FOR ACQUIRING LANGUAGE SKILLS

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Abstract

Content and Foreign Language Integrated Learning is an effective methodology for teaching foreign languages through integrated curricula in non-linguistic areas. Based on this idea, and considering the importance of learning English in today's globalised labour market, the use of simple tools was proposed which also fulfilled an important premise: to be updated and close to the engineering students; for what is important to strengthen the communicative capacity of the students in the English language. In addition, nowadays, students must accredit, before finishing their studies, a level of linguistic competences in a foreign language equivalent at least to level B1 of the Common European Framework of Reference for Languages or higher, encouraging throughout the curricula the practice of fluent English, at least, in reading and writing comprehension, as well as to establish a simple conversation.

The aims of this work are: To use new technologies as tools to help learning; To propose a practical, simple and attractive methodology for students; To promote the use of a second language in the classroom and To Use self-assessment methods. As a general objective, it is intended to improve the linguistic abilities of students, promoting the use of a English language by teachers and students

As a methodology, The Higher Technical School of Engineering proposed as an alternative to encourage the learning of English the carrying out of activities that can be evaluated in English in some of the subjects that constitute the curricula of its Bachelor's degrees. A methodology in which we had already had previous experiences, consisting in the use of simple applications for Android mobiles (Apps) as practical verification tools related to the subjects from the Area of Mechanics of Continuous Media and Theory of Structures.

This activity began to be implemented in the academic year 2016-17, with several Apps developed for Android with free access developed mainly in Spanish language. The aim was to use similar applications developed in English language, so as to encourage the use of the second language, as well as the incorporation of a technical vocabulary in English related to the subjects taught. These applications would consist of: dimensioning/checking of insulated footings, dimensioning and checking of retaining walls, calculation of stresses and deformations, checking of sections subjected to normal stresses, Mohr Circle, etc. All applications are developed in English and the procedure is the same: starting hypothesis; data input; structural calculation, output of results (this can be as a list or graphically, depending on the case).

This paper explains the process of implementation of this teaching technique, with some of the examples used by the teaching team, which aims to open an alternative that promotes the use of a second language within students, while allowing teachers to participate actively in the acquisition of language skills.

The result of this experience has been very promising, since it was found that students actively involved and learned several technical terms in Spanish and English languages. This was confirmed with some surveys that were made by both, students and teachers, at the end of the experience, in which the language level reached by each student was assessed, and the adequacy and interest of the work developed to promote the use of the second language was valued very positively by the students

Keywords: Apps, Android©, linguistic skills, teaching tools.

1 INTRODUCTION

Nowadays the use of mobile devices within engineering students is absolutely widespread, such as mobile phones (android or iphone), tablet or both devices; as some authors point out [1], and they use it constantly to brows on the internet, check the website of the university, their email and, of course, social networks; so it is a very useful and attractive tool for teaching use. In addition, this methodology helps communication and group work of students, so it allows the acquisition of social skills, further to being very well valued its use within students [2], being a medium that they feel very comfortable.

In many cases students are shifting the use of computers by mobile devices in the classroom, which allows them greater comfort and portability. In this sense, there are examples of the use of Apps in engineering [3], in which it is proposed to be used in manufacturing engineering or higher education.

It is known that the use of applications improves learning while allowing interaction between students and teachers, and as proposed in this study, enables the learning of the English language - something already pointed out by authors such as [4] - or in general it allows to practice a second language, finding some cases in which the use of mobile devices is proposed as a learning tool for listening abilities of English language [4] (although in this case audio books were used) or oral and written compression [5].

It is important to highlight that in this work it has not been attempted to use specific Apps to study a second language, an issue that already has some specific studies, such as [6] and [7], but that it is about taking advantage of Apps directed to the engineering to encourage the use of English language in classroom, trying to motivate students and to ease the learning of technical vocabulary [8]

This work is integrated into a teaching innovation project developed at the Higher Technical School of Engineering (ETSI) of the University of Huelva during the 2017/18 academic year. It is based on the premise that Integrated Learning of Foreign Content and Languages (AICLE) is an effective methodology for teaching foreign languages through integrated systems in non-linguistic areas, such as those found in the different Engineering Degrees.

All this must be understood within the context of university education in Spain, where students must accredit a minimum of competencies equivalent to level B1 (in the case of the University of Huelva) to obtain the degree according to the Common European Framework of Reference for Languages (MCERL) or higher; the vast majority of students decide to accredit English as their language.

The general aim of this work is to promote and facilitate the acquisition of the transversal competence "Demonstrate the oral and written use of a second language according to the Common European Framework of Languages at level B1" by the students of the different Engineering Degrees in the ETSI. To achieve this general objective, the following specific aims have been defined:

- To Involve the teaching staff of the Higher Technical School of Engineering of the University of Huelva in the teaching-learning process.
- To promote group work within the classroom.
- To establish teaching practices that can be consolidated and have a positive impact in a long term on the success of the Strategy for the Internationalization of the University of Huelva.
- To encourage the use of technical vocabulary in English.
- To promote the realization of activities in English in those subjects in which the use and mastery of a second language is included as a transversal competence.

2 METHODOLOGY

In order to encourage the use of English in classrooms, the ETSI proposed that several evaluable activities be carried out in different subjects. In addition, it had been detected that there were subjects that in their teaching guides contemplated as a transversal competence the use of English as a second language, but that was not transferred in any concrete and evaluable activity, so in the different reports of each degrees it could confirmed that this aspect should be improved.

To carry out the work, a coordinator was appointed for each degree, the first author of this work being the coordinator of Degree in Mechanical Engineering. Within this context, the teaching innovation project was proposed that had the following phases (to be developed during the 2017/18 academic year):

- To collect the proposals and assess their suitability.
- Incident management that could arise during the execution and evaluation of the activities.
- Discussion of the results each degree
- Sharing of results with the rest of the coordinators.

This global project for all the degrees of the ETSI is specified in several subjects in the Degree of Mechanical Engineering, and within this degree, it was raised in the subjects "Concrete Structures and Calculation of Foundations" (belonging to the Mechanics Area of the Continuous Media and Structure Theory) in which there was already previous experience in the use of Apps in Spanish in the previous course (2016/17). 60 students participated in the activities, and one of the subjects was an optional and the other one a mandatory, both belong to the last courses of the degree.

Simple free-use applications related to the subject were used. For this, the Mobizen© App [9] was previously implemented, which allowed linking an Android© mobile device with classroom PC and projector.

The applications to be used serve to make simple checks on isolated foundations, dimensioning of concrete sections beam type and column type (working mainly on compression and flexion). The teacher briefly explained its installation and operation and later the students made examples autonomously, so they had to use the necessary technical vocabulary. This work was done once individually and sometimes in groups. Finally, some students were asked to explain the work done, having to use English terminology.

In the work evaluation its development was assessed (with a percentage of 30%), and also the results obtained (10%), the appropriate use of the terminology (which accounted a 40%) and the clarity of their exhibition (20%) were assessed.

Together the work with each of Apps, the students were incorporating a technical terminology in English related to the Apps themselves, with its translation into Spanish and a brief description of each terms, also in English. For this, the "Glossary" tool that includes Moodle© as an activity was used. This dictionary was reviewed by the subject teachers and was visible to all students enrolled in the subject.

Some of the Apps that were used were the following:

- Column Design (eigenplus) [10]
- Beam Design (eigenplus) [10]
- Bearing Capacity, application developed with thunkable [11]
- IsolatedFooting, BitByte, software Technology [12]

Keep in mind that, although the most popular collection of Apps is in Google Play©, there are many collections of Apps, such as: socrative [13], imobile [14], slideme [15], etc., such as noted in [16] and [17], which mostly offer free applications and even web spaces to share experiences. Likewise, we must not forget certain security risks that may arise in the use of Apps and mobile devices, as some authors have already advanced [18], with the possibility of obtaining personal data or accessing documents from our devices.

As an example, some of the screens of the different applications are shown in the following figures; Thus, in Fig. 1 an initial screen appears in which detailed information on the theory used in the Apps is offered. Reading this theory offers students the possibility of practicing written English with a technical vocabulary.

Fig. 2 shows some of the Apps initial screens used. All of them allow us to select the system of units, and in some cases, the applicable regulations.

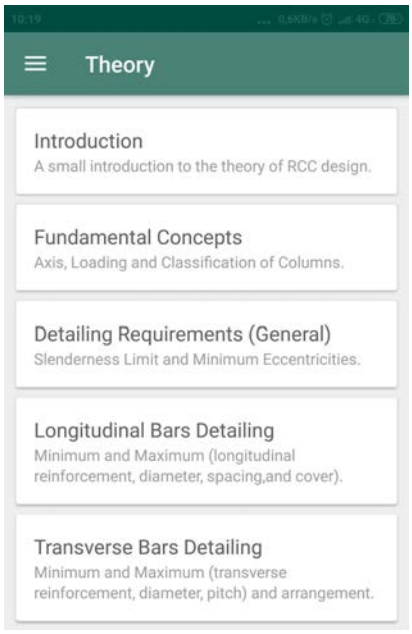
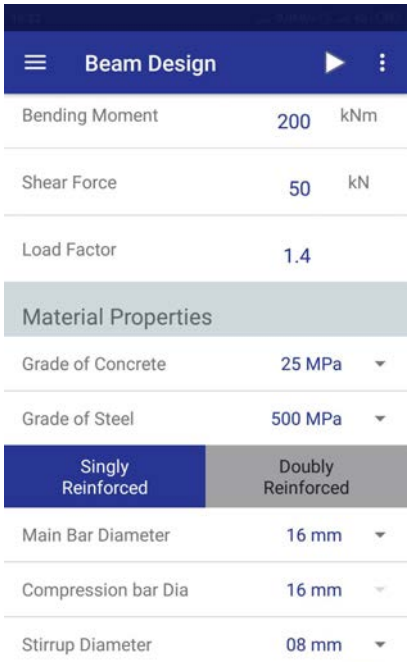
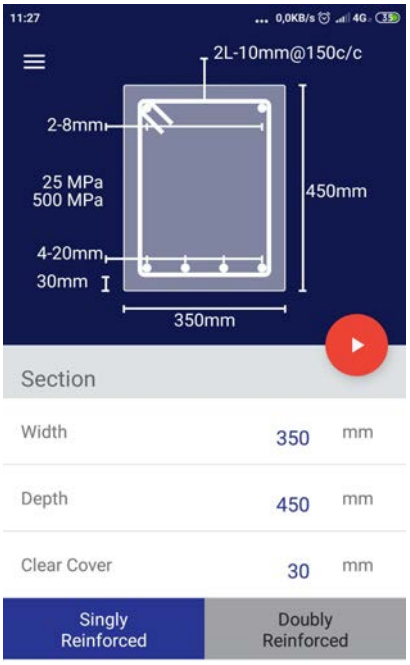


Figure 1. Explanation of the theory used in the App for dimensioning reinforced concrete columns (Column Design, eigenplus)





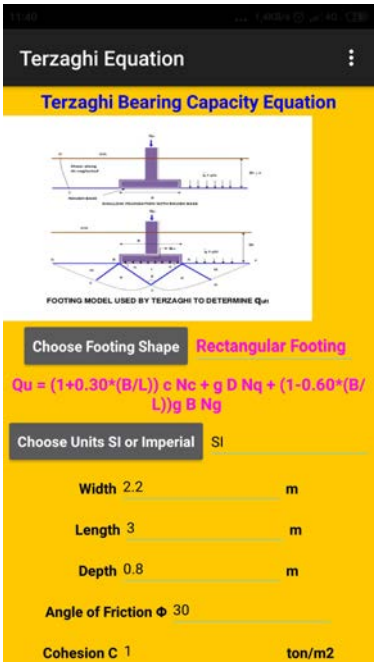
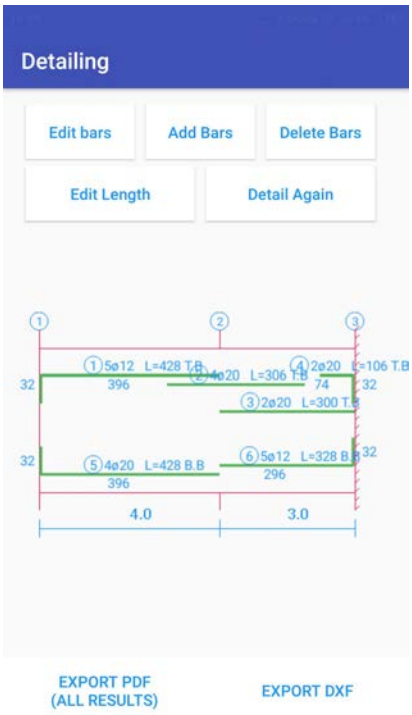


Figure 2.a. *Figure 2.b.* *Figure 2.c.*

Figure 2. Initial screens with data input (Beam Design, eigenplus-2.a.; Column Design, eigenplus-2.b; Bearing Capacity, thunkable-2.c)

Fig. 3 shows some of the result output screens which allow us to quickly and effectively visualize the results validity, so these applications also serve as a simple element of self-evaluation for students, this being a very important aspect to encourage autonomous learning.



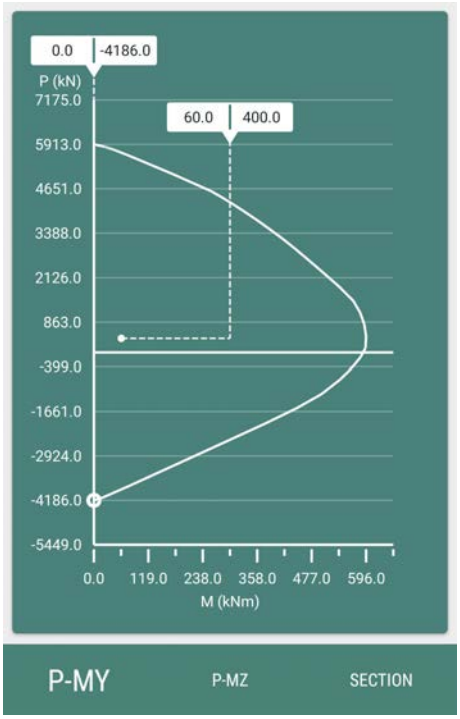


Figure 3.a. *Figure 3.b.*

Figure 3. Results output: 3.a., reinforced concrete beam (Bean Design, eigenplus); 3.b.; column capacity (Column Design, eigenplus)

3 RESULTS

To evaluate the activities, surveys were carried out on the students when each of the works were finished. These surveys presented several items to try to cover different aspects of each activity. To make the polls, some sheets were prepared in which, in addition to some student data (course, subject, sex, level of English, if he was accredited or not), 13 questions related to the activity were raised. All questions were scored in a range between 1 and 5.

These surveys were anonymous and ended with an observations section so that students could freely include any comments, evaluation or analysis on the activities carried out.

In other aspects, the students were wondered about knowledge of AICLE methodology and if they attended some type of course or seminar about that subject. The previous ability of the students to carry out this type of activity, the adequacy of the activities for the acquisition of linguistic competences and the obligatory or not of performing activities in English language were also assessed.

Some of the survey results are presented in Figure 4. To obtain these results, the 5 highest and 5 lowest results were eliminated, calculating the average with the rest of them (50).

Item 1 represents the assessment of students' prior knowledge about AICLE, while in 2 they wondered if they had done any English promotion activity before. In 3, the level of the students with the use of English in the classroom was assessed. As can be seen in Fig. 4, the activity had a very high acceptance, as confirmed by the two results that represent the adequacy of the activity with the promotion of English (items 4 and 6). However, the valuation of the resources used reaches an average value of only 3.1.

As a consequence of the activities made, the students completed more than 30 technical terms related to the two subjects on the Moodle platform. This vocabulary involved more than 80% of the students, which considering that this last activity was voluntary, is considered very positive.

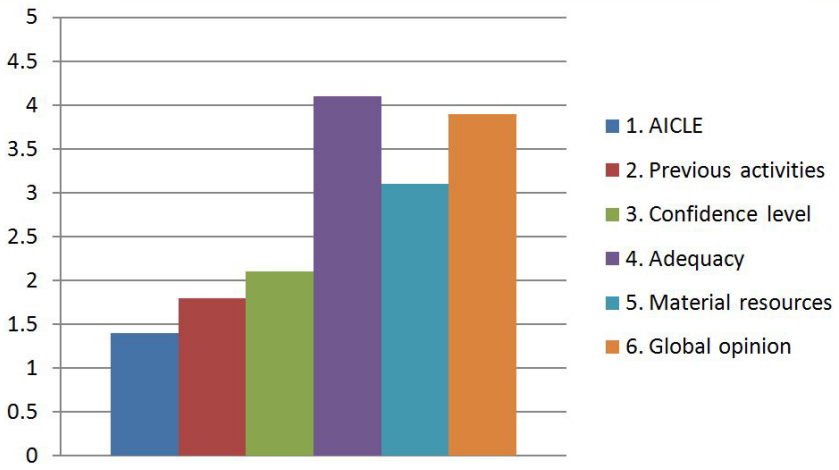


Figure 4. Results obtained in the surveys

Similar surveys were completed within teachers, yielding results that we could point out as very related to the answers given by the students, given that difficulties were also seen among teachers to cope fluently in English; They also presented very similar results in terms of material resources used and in terms of the adequacy of these types of activities.

4 CONCLUSIONS

In this work it has been studied the possibility of using Apps as teaching tools in Engineering to encourage the use of a second language (in this case English) in the classroom. Six applications have been used in two subjects of the Mechanical Engineering Degree.

In view of the results obtained, it can be concluded that:

- The activities carried out with the Apps (free) encourage the use of English, mainly written language, but also at the conversation level.
- Within the students involved, a high level of acceptance of these types of activities with mobile devices has been appreciated.
- It was found that the students involved easily assimilated the technical vocabulary through these activities.
- It was confirmed that students are not comfortable using English language, which would be justified by the low number of activities made in this language. This in turn confirms the need to encourage similar activities.
- It is believed necessary to invest more resources (technological and human) in innovation projects, courses, etc. that encourage the use of English within students and teachers.

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